

PATENT ABSTRACTS OF JAPAN

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(54) SOUND SLEEPING DEVICE AND RECORDING MEDIUM FORMED BY USING
THE SAME

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a device for expediting a sound sleep by
calming down a mind and effectively making him sleepy.
SOLUTION: A sound sleeping device for expediting a sound sleep by generating a
sound synchronously with a person's breathing cycle comprises a pattern setter 20

for selecting a specific strong and weak pattern from a plurality of types of strong and weak patterns previously set as the strong and weak patterns of the sound generated at each breathing cycle, a sound shielding unit 22 for selecting the specific sound from a plurality of types of sounds previously set as sounds generated at the respective breathing cycles, a timer setter 24 for regulating the breathing cycle and the timing for generating the sound by corresponding, and a controller 12 for generating the sound from a sound generating means according to the set conditions of the pattern setter, the sound selector and the timer setter.

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- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
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CLAIMS

[Claim(s)]

[Claim 1] It is good sleep equipment which promotes good sleep by making it synchronize with people's respiratory cycle, and emitting a sound. The pattern setting section which chooses [from] a specific strength pattern among two or more sorts of

strength patterns beforehand set up as a strength pattern of the sound emitted for said every respiratory cycle, ***** which chooses [from] a specific sound among two or more sorts of sounds beforehand set up as a sound emitted for said every respiratory cycle, Good sleep equipment characterized by having the timer setting section for making the timing which emits said respiratory cycle and sound correspond, and adjusting, and the control section which generates a sound from a sound generating means according to the setups of said pattern setting section, *****, and the timer setting section.

[Claim 2] Good sleep equipment according to claim 1 or 2 characterized by having the sound recording section which records the sound signal generated from said sound generating means on a record medium.

[Claim 3] The record medium which is a record medium with which the sound signal was recorded by said sound recording section, and is characterized by recording the sound chosen by said ***** as a general-purpose refreshable sound signal according to the predetermined strength pattern chosen by said pattern setting section according to a user's respiratory cycle using good sleep equipment according to claim 2.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the record medium created using the good sleep equipment and this which promote comfortable sleep.

[0002]

[Description of the Prior Art] Sleep is very effective in order to take rest, and it can recover physical strength effectively by deep sleep. however, it cuts mind by the time that he cannot string up and go to sleep, or it cannot sleep well when an environment changes. It is just often going to be heard as a reason for the ability not to go to sleep as a reason that a bedroom is too quiet and that an external sound is worrisome.

[0003] Various approaches are conventionally considered as an approach of solving a problem [such wakeful or sleep lightly], and enabling it to sleep well. For example, although the method of using a sound is one of them, there are a thing which enabled it to listen to music, a thing to which arrange a loudspeaker near the bolster and made it make a sound output from a loudspeaker, a thing it was made to generate the fluctuation sound of 1/f, enabling wearing of a cassette player and sleeping on a bolster body, as an example of application of a sound. Moreover, as an approach of improving waking, vibrator is built into a bolster and there is a thing it was made to

generate an alarm sound from a loudspeaker.

[0004]

[Problem(s) to be Solved by the Invention] However, in the case of the approach of promoting good sleep using a sound, a sound source is arranged a bolster body or near the bolster, and comfortable good sleep cannot necessarily be performed by the approach of setting up so that it may only be audible in music, a natural sound, etc. Even if it enabled it to listen to the music by which an automatically near sound or an alignment is stabilized, it may happen for a sound to be worrisome on the contrary as usual, and to stop attaching to sleep.

[0005] This invention aims at offering the record medium for good sleep which created using the good-sleep equipment and this which can acquire the outstanding good-sleep effectiveness by using the sound which can promote good sleep of a user as much as possible like the example mentioned above about the equipment which promotes good sleep using a sound, and controlling generating of a sound to be able to promote good sleep efficiently.

[0006]

[Means for Solving the Problem] This invention is equipped with the next configuration in order to attain the above-mentioned purpose. Namely, it is good sleep equipment which promotes good sleep by making it synchronize with people's respiratory cycle, and emitting a sound. The pattern setting section which chooses [from] a specific strength pattern among two or more sorts of strength patterns beforehand set up as a strength pattern of the sound emitted for said every respiratory cycle, ***** which chooses [from] a specific sound among two or more sorts of sounds beforehand set up as a sound emitted for said every respiratory cycle, It is characterized by having the timer setting section for making the timing which emits said respiratory cycle and sound correspond, and adjusting, and the control section which generates a sound from a sound generating means according to the setups of said pattern setting section, ***** and the timer setting section. Moreover, it is characterized by having the sound recording section which records the sound signal generated from said sound generating means on a record medium.

[0007] Moreover, using said good sleep equipment, it is the record medium with which the sound signal was recorded by said sound recording section, and the sound chosen by said ***** is characterized by what is recorded as a general-purpose refreshable sound signal according to the predetermined strength pattern chosen by said pattern setting section according to a user's respiratory cycle.

[0008]

[Embodiment of the Invention] Hereafter, the suitable operation gestalt of this invention is explained to a detail based on an accompanying drawing. Drawing 1 is the block diagram showing the configuration of 1 operation gestalt of the good sleep equipment concerning this invention. The good sleep equipment concerning this

invention is characterized by a user doubling a user's breathing, pulse, and timing, generating repeatedly the sound which invites the sound or sleep it is sensed that is comfortable, and making it tell. The good sleep equipment shown in drawing 1 shows the block configuration of each part which enables these operations.

[0009] In drawing 1 , 10 is the power supply section which built in the cell. A power supply section 10 can also use a commercial AC power besides a cell. 12 is a control section which performs various control, such as a pattern of a sound, generating timing, and sound volume. A control section 12 is equipped with storage means to memorize ROM and various setup which memorized the pattern of a sound etc., such as RAM, and data-processing means, such as CPU.

[0010] 14 is a loudspeaker as a generating means of a sound. A loudspeaker 14 is controlled by the control section 12 through a mechanical component 16. 18 is volume which adjusts the sound volume of a loudspeaker 14. Volume 18 is equipped with the volume input section which controls the sound volume at the time of sleeping, and the volume input section which controls the sound volume of the alarm sound at the time of rising. In addition, as a generating means of a sound, it is possible not only a loudspeaker but to use headphone or an earphone, and it is also possible to use audible-tone generating means, such as IC equipment.

[0011] 20 is the pattern setting section as a pattern selection means to choose from a loudspeaker 14 the pattern of the strength of a sound which generates a sound. The pattern of the strength of a sound starts to sound volume with a fixed sound, and means the strength of a sound until it disappears from the time of sound generating of becoming weak gradually. The good sleep equipment concerning this invention is constituted so that a sound may be repeated and it may generate by the fixed pattern. By the pattern setting section 20, a user can choose the pattern of the sound in the cycle of a repeat according to liking. In a control section 12, the pattern chosen by the pattern setting section 20 is memorized to RAM, a mechanical component 16 is driven according to the pattern, and a sound is generated.

[0012] 22 is ***** as a **** means to choose the sound generated from a loudspeaker 14. This ***** 22 is for a user to choose sounds, such as a shearing sound, a sound of an insect, and music, even for that of natural sounds, such as a sound of the little stream of a brook, and a sound of a ripple, and a bird according to liking. It enables it to choose especially the heartbeat and respiratory sound which the embryo was hearing within mother's womb as a generating sound with the good sleep equipment of this operation gestalt. The heartbeat currently heard within mother's womb and the respiratory sound are effective, when there is an operation which promotes good sleep effectively and it is especially used for infants. The sound which can be chosen by these ***** 22 is beforehand memorized by ROM of a control section 12.

[0013] 24 is the timer setting section as a setting means of the timing of a sound

which makes it generate from a loudspeaker 14. It consists of this timer setting section 24 so that the sound generated from a loudspeaker 14 can be set up according to a user's respiratory cycle and pulse cycle by the repeat pattern. That is, in case the sound chosen by ***** 22 is generated from a loudspeaker 14 according to the strength pattern chosen in the pattern setting section 20, the cycle time doubled with the user is set up and it is made to generate a sound from a loudspeaker 14 with the good sleep equipment of this operation gestalt according to the cycle time by the timer setting section 24.

[0014] As mentioned above, when the good sleep equipment concerning this invention generates a sound according to a user's respiratory cycle or pulse, it is the description to make a good sleep promotion operation cause. The timer setting section 24 enables it to adjust a sound recurrence interval beforehand from a respiratory cycle and a heart rate being ** by the user. Unless the cycle time set as the timer setting section 24 is memorized by RAM of a control section 12 and the set point by the timer setting section 24 is cleared, based on the set point, generating of a sound is controlled by the control section 12.

[0015] In addition, it is possible in attaching each setup of a timer setup which stops generating of a sound, a fading setup which extracts the generating sound from a loudspeaker 14 gradually as a whole whenever it carries out fixed time amount progress, and a time-of-day setup for rising which carries out a time-of-day setup to the timer setting section 24, after carrying out a fixed time amount drive of the loudspeaker 14. After going to sleep completely, a timer setup and a fading setup are used when sound generating is unnecessary.

[0016] 26 is a switch for ON-OFF [the power source of good sleep equipment]. 28 is a receive section for carrying out remote control of the good sleep equipment. In case remote control of the good sleep equipment is carried out through a cellular phone etc., a control signal is received by the receive section 28 and a control section 12 is controlled.

[0017] Drawing 2 shows the example of a configuration of the good sleep equipment incorporating the configuration of each block section mentioned above. The configuration of the substrate with which drawing 2 (a) is included in the general-view Fig. of good sleep equipment, and drawing 2 (b) is included in good sleep equipment is shown. As shown in drawing 2 (a), control units, such as an accommodation tongue respectively corresponding to the volume 18 mentioned above, the pattern setting section 20, ***** 22, and the timer setting section 24, are prepared in the external surface of the case of good sleep equipment. It is for all to use sound volume, a sound, and a timing setting in the case of use, setting them as it suitably. In addition, a loudspeaker 14 is arranged as a sound source on the external surface of a case, and also a headset jack and an earphone jack are attached and you may enable it to hear a sound by headphone or the earphone. As shown in drawing 2 (b), a cell is built in as

a power supply section 10, and IC equipment is built in as a control section 12. 28 is the antenna for reception attached in the case as a receive section. In a control section 12, the input signal from an antenna is detected and necessary control is performed.

[0018] Drawing 3 shows the example which equipped the bolster 40 with good sleep equipment 30. In a case, the necessary component part of a power supply section 10 and control-section 12 grade is incorporated, and good sleep equipment 30 changes, as shown in drawing 2 . Therefore, arrangement of each component part can be chosen suitably and forming in a compact extremely is possible. The approach of using it as a direction using good sleep equipment 30, putting on bedside, the approach of attaching in the crosspiece of a bed, and the method of using it like this operation gestalt, attaching in a bolster 40 are possible. The example of illustration is an example which the surface fastener was attached [example] in the rear face of good sleep equipment 30, and made the bolster 40 install good sleep equipment 30. By having installed good sleep equipment 30 with the bolster 40, a sound propagation-comes to be easy to a user.

[0019] Drawing 4 is the explanatory view showing the example of use of the good sleep equipment 30 of this operation gestalt. The good sleep equipment 30 concerning this invention promotes good sleep, and makes falling asleep improve by doubling a user's respiratory cycle or pulse, and timing, and telling a sound. Drawing 4 is the explanatory view showing the output pattern of the sound emitted from a user's respiratory cycle and loudspeaker 14. Graph A shows a user's respiratory cycle by drawing 4 . They are the point that P points of a graph ended inhalation of air, the period when between P to Q is breathing out, and the period when between Q to P is breathing. A graph B-1 is the example of the output pattern (strength pattern) of a sound, timing is doubled with the period which progresses to P from Graph Q, sound volume increases, and in case it breathes out, it is set up so that sound volume may decrease gradually. Thus, good sleep can be effectively promoted by making the timing of breathing, and the timing of sound volume in agreement. The timing and the sound of breathing are adjusted by said timer setting section 24.

[0020] The output pattern (strength pattern) of having constituted so that the output pattern of the timing of breathing and a sound might be synchronized and a sound might be repeatedly generated by the pattern of the sound by the graph B-2 and the graph B-3 is the same as that of the above-mentioned example. However, in a graph B-2, it is characterized by preparing two parts (R part of a graph) which strengthen a sound according to the timing which begins to start inhalation of air in having prepared one part (R part of a graph) which strengthens a sound in pulse in order to take a tune according to the timing which begins to start inhalation of air, and a graph B-3. If the part which strengthens a sound in pulse according to the timing of inhalation of air is prepared as shown in a graph B-2 and B-3, it becomes easy to double the timing of

inhalation of air, and the good sleep effectiveness can be promoted further. The output pattern of these sounds is chosen by said pattern setting section 20.

[0021] In addition, the graph B-1 of drawing 4 , B-2, and B-3 can show the strength pattern of a sound, and the sound itself can choose a shearing sound or sounds, such as a sound of an insect, even for that of a natural sound and a bird suitably. If the respiratory sound which the embryo is hearing in mother's womb as a selection sound especially is used, it is effective in infants' promotion of good sleep. A favorite sound is chosen by said ***** 22. Drawing 5 is what showed a user's heartbeat explanatorily as a pulse, and Graph C and Graph D show the case where heart rates differ. It becomes possible to invite the sleep stabilized more by making into a heartbeat when an embryo is in mother's womb the sound emitted from a loudspeaker 14, making it synchronize with a user's heart rate, and emitting a heartbeat from a loudspeaker 14. The timing of the part which strengthens a sound by the pattern of the sound shown in drawing 4 at the time of inhalation-of-air initiation can be synchronized with a user's heart rate.

[0022] It can stop nervous pride, can invite sleep and can be made to sleep well effectively by weakening a sound gradually as the good sleep equipment concerning this invention sets up the strength pattern of a sound so that it may be made to synchronize with a user's respiratory cycle and a pulse as mentioned above, it generates a stronger sound with inhalation of air and breathes out. Of course, on the occasion of use, it can be adjusted and used for comfortable good sleep conditions according to a user by adjusting sound volume suitably or carrying out [sound] fading gradually.

[0023] In addition, the control section 12 of this operation gestalt can emit an alarm sound from a loudspeaker 14 based on a setup of the timer setting section 24, and can also use it for rising. The sound volume of an alarm sound can be adjusted by volume 18, and the class of alarm sound can be chosen by ***** 22. If a receive section 28 is used, the dial tone from a cellular phone is sensed and an alarm sound can be emitted.

[0024] Drawing 6 is the block diagram showing the configuration of other operation gestalten of the good sleep equipment concerning this invention. The good sleep equipment of this operation gestalt is characterized by considering as the configuration which added the sound recording section 50 to the configuration of the good sleep equipment shown in drawing 1 . The sound recording section 50 is a component for recording the signal of the sound generated from the generating means of the sound of loudspeaker 14 grade on a record medium. As mentioned above, in a control section 12, the sound chosen by ***** 22 according to the pattern of the strength chosen in the pattern installation section 20 is generated from a loudspeaker 14 according to the predetermined cycle time by the timer setting section 24. In the sound recording section 50, the signal of the sound generated from this loudspeaker

14 is recorded on a record medium. As a record medium, media, such as CD-ROM and a record tape, can be used and a sound signal is recorded in the sound recording section 50 as a signal which makes a sound refreshable with the general-purpose playback machine which reproduces these record media.

[0025] The sound signal generated from a loudspeaker 14 by the control section 12 is mentioned in a record medium, and the sound signal is recorded according to the fixed cycle time according to a user's breathing or pulse by the predetermined strength pattern in the predetermined sound. CD-ROM as a record medium, a record tape, etc. can be used very easily, and can reproduce a sound easily using a playback machine. The good sleep equipment concerning this invention can demonstrate the same effectiveness by generating a sound according to a user's respiratory cycle or pulse also by making a good sleep promotion operation cause, using a general-purpose playback machine instead of the good sleep equipment of the dedication mentioned above, and using the above-mentioned record medium.

[0026] If the good sleep equipment of this operation gestalt is used, it is easy to create suitably the record medium into which the cycle time was changed, or the record medium into which the class of sound was changed by ***** 22. Therefore, it is [handling] easier to prepare beforehand two or more kinds of record media with which the cycle times etc. differ, to choose a record medium suitably in use, and to reproduce a sound using a general-purpose playback machine. When good sleep equipment becomes large-scale especially, the method of using a record medium is effective. Record media, such as CD-ROM, have high utility value also from the point that it carries easily, and can do, and a sound can be reproduced and used in a proper location.

[0027]

[Effect of the Invention] According to the good sleep equipment concerning this invention, a user's alignment can be made to be able to settle down, sleep can be invited effectively, and it can be made to sleep well by having constituted so that the sound which makes it synchronize with a user's breathing or pulse, and stabilizes an alignment might be emitted according to a user, as mentioned above. Moreover, the record medium which recorded the sound signal using the good sleep equipment concerning this invention can generate the sound which invites sleep effectively using a general-purpose sound playback machine, and does so the higher efficacy of being able to use effectively as an object for good sleep.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the configuration of the good sleep equipment concerning this invention.

[Drawing 2] They are the general-view Fig. of the good sleep equipment concerning this invention, and the explanatory view of a substrate.

[Drawing 3] It is a perspective view in the condition of having attached good sleep equipment in the bolster.

[Drawing 4] It is the explanatory view showing the pattern of the strength of a respiratory cycle and a sound by comparison.

[Drawing 5] It is the explanatory view showing the pulse of a heartbeat.

[Drawing 6] It is the block diagram showing the configuration of other operation gestalten of the good sleep equipment concerning this invention.

[Description of Notations]

10 Power Supply Section

12 Control Section

14 Loudspeaker

16 Mechanical Component

18 Volume

20 Pattern Setting Section

22 *****

24 Timer Setting Section

28 Receive Section

30 Good Sleep Equipment

40 Bolster

50 Sound Recording Section